

[0062] The SRNC function is directly connected to a mobile station **100** and allocates radio resources to the mobile station **100**, and in case of call connecting, the RNC interlocks with a radio communication core network **300** to provide service to the mobile station **100**. Only one CRNC function exists in the whole UTRAN **200** and the CRNC is a kind of RNC that controls a logical channel over the whole UTRAN **200**.

[0063] Referring to **FIGS. 5A and 5B**, the interlocking structure and the logical interface are illustrated, in case where one RNC performs both of the SRNC and the CRNC functions, and in a second case where one RNC performs the CRNC function and another RNC performs the SRNC function, respectively.

[0064] The present invention is for the hybrid ARQ type II/III method in which there is one RNC having the CRNC function and another of the RNC which has the SRNC function in the UTRAN **200** and uses a transport channel, such as a downlink shared channel (DSCH), in an interlocking structure as **FIG. 5B**.

[0065] That is, as a preferred embodiment, the present embodiment assumes the CRNC and the SRNC exists on the same asynchronous radio network.

[0066] **FIG. 6** is a diagram showing relations among conventional RLC-PU, RLC-PDU, MAC-PDU and a transport block.

[0067] As described in **FIG. 6**, a RLC-PDU includes one or more RLC-PU and the RLC-PDU is mapped into the MAC-PDU. The MAC-PDU is mapped to a transport block of a physical layer, and then CRC is added thereto.

[0068] In the physical layer of a transmitter, a data is transmitted through an encoding unit, a rate matching unit, an interleaver and a modulating unit. In the receiver, the CRC of the data is checked after passing through a demodulating unit, a deinterleaver, and a decoding unit to determine whether an error exists. If an error exists in the data, the receiver requests re-transmission of the data and stores the error-containing data in a buffer. At this time, the re-transmitted RLC-PDU is combined with the error-generated RLC-PDU to carry out a decoding, and then the CRC is checked. In this case, the sequence number and the version of currently received RLC-PDU should be known to carry out combining.

[0069] Also, the hybrid ARQ type II/III may increase error generation possibilities in the header of the RLC-PDU because it transmits with a high coding rate in an initializing transmission.

[0070] To solve the problem, the HARQ-RLC-Control-PDU, which has the header information, is generated from the RLC-PDU and the HARQ-RLC-Control-PDU is transmitted with the RLC-PDU. That is, a RLC protocol entity generates the RLC-PDU and organizes the HARQ-RLC-Control-PDU referring to the header information.

[0071] The RLC protocol entity transmits the RLC-PDU and the HARQ-RLC-Control-PDU to a MAC protocol entity. At this time, different or same type of logical channel can be used.

[0072] In case of using the different type of the logical channel, the RLC-PDU and the HARQ-RLC-Control-PDU

use a logical channel, such as a dedicated traffic channel (DTCH) and a dedicated control channel (DCCH), respectively, and MAC-Data-REQ is used as a primitive.

[0073] In case of using the same type of the logical channel, the RLC-PDU and the HARQ-RLC-Control-PDU use a logical channel such as DTCH and the MAC-Data-REQ is used as a primitive.

[0074] The MAC protocol entity transmits the received RLC-PDU and the HARQ-RLC-Control-PDU to the physical layer after it transforms each of them to a transport block. At this time, one transport channel is used and MAC-PDU (including RLC-PDU) a and the MAC-PDU (including Control-RLC-PDU) b which are transmission blocks transformed from the RLC-PDU and the HARQ-RLC-Control-PDU, respectively, are transformed to a transport channel, such as the DSCH, and PHY-Data-REQ is used as a primitive. At this time, the PHY-Data-REQ primitive can be used to the MAC-PDU a and the MAC-PDU b, respectively, and the MAC-PDU a and the MAC-PDU b can be transmitted to the physical layer by using one PHY-Data-REQ primitive.

[0075] The physical layer transforms the received MAC-PDU a and the MAC-PDU b to a 10 ms radio frame through an encoding unit, a rate matching unit, an interleaver and a modulation unit, then transmits the MAC-PDU a and the MAC-PDU b to a user equipment (UE). At this time, one physical channel is used and the MAC-PDU a and the MAC-PDU b are transformed to the 10 ms radio frame and transmitted to the user equipment by using a physical channel, such as PDSCH.

[0076] **FIG. 7** is a diagram showing a data processing method on a transmitting part in accordance with the present invention.

[0077] As described in **FIG. 7**, a RLC protocol entity, a MAC-D protocol entity, a MAC-C/SH protocol entity and a physical entity are initialized at step **701** by a RRC protocol entity.

[0078] The RLC protocol receives data, which is to be transmitted to the receiver, from an upper layer at step **702**. The RLC protocol entity converts the received data to RLC-PDU and generates HARQ-RLC-Control-PDU used for the hybrid ARQ type II/III based on header information of the RLC-PDU. The RLC protocol entity transmits the RLC-PDU and the HARQ-RLC-Control-PDU to the MAC-D protocol entity through a different or the same logical channel at steps **703** and **704**.

[0079] In case of using different types of logical channels, the RLC protocol entity transmits the RLC-PDU to the MAC-D protocol entity of the SRNC through a logical channel, such as the DTCH at step **703** and the HARQ-RLC-Control-PDU is transmitted to the MAC-D protocol entity of the SRNC through a logical channel, such as the DCCH at step **704**.

[0080] Meanwhile, in case of using the same type of logical channel, the RLC protocol entity transmits the RLC-PDU and the HARQ-RLC-Control-PDU to the MAC-D protocol entity of the SRNC through a logical channel, such as the DTCH at steps **703** and **704**.

[0081] In this specification, for easy description, there is described a transmission process of the RLC-PDU and the HARQ-RLC-Control-PDU generated from the RLC proto-